

ABSTRACT

An efficient tapered optical fiber bundle along with the method of manufacturing is presented. The tapered fiber bundle is fully fused to an induced shape with no interstitial space between fibers. To minimize fiber deformation and hence the tapered bundle's loss, the individual fibers are minimally deformed by positioning them in a fixture with pre-determined geometry prior to fusion. The bundle could be optionally reshaped after fusion. The tapered bundle could then be used in its original form as a star coupler, or it could be cleaved and coupled to a multimode fiber, a multi-clad fiber, a cladding-pumped fiber, or an optical system to form an optical device. The resulting optical device has improved efficiency and lower loss compared with prior art devices.